DOCUMENT RESUME

ED 361 656 CS 011 391

AUTHOR	Anderson, Valerie; Roit, Marsha
TITLE	Planning and Implementing Collaborative Strategy Instruction with Delayed Readers in Grades 6-10. Technical Report No. 584.
INSTITUTION	Center for the Study of Reading, Urbana, IL.
PUB DATE	Sep 93
NOTE	26p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Cooperative Learning; Elementary School Teachers; Instructional Effectiveness; Intermediate Grades; Preservice Teacher Education; Program Descriptions; Reading Difficulties; *Reading Instruction; Reading Research; *Reading Strategies; Secondary Education; Secondary School Teachers; Special Education
IDENTIFIERS	Experimentalism; Strategic Reading

ABSTRACT

This report describes the evolution of an innovative research project in which inservice special education teachers engaged in collaborative strategy instruction with small groups of severely reading-delayed adolescents (ages 12-16). The report emphasizes how teachers' contributions resulted in a unique approach to reading strategy instruction. The report describes the characteristics of the teacher education model and relates the characteristics to experimental findings from research carried out to test the effects of the model. Nine experimental and seven control teachers and their students took part in the study. Experimental teachers received peer support from previously trained teachers and took part in self-evaluative workshops as they applied collaborative reading strategy instruction with their students. An analysis of videotaped pre- and posttest reading sessions showed significant gains in favor of experimental teachers on many dimensions related to fostering strategic reading, which were mirrored by related gains in students. A standardized comprehension test also favored experimental students. The report concludes with a discussion of some of the problems in achieving enduring effects with educational innovations and with suggestions for future research. A table listing teacher shifts toward fostering active reading strategies and intentional learning and a table listing student shifts toward active reading and intentional learning are included. Contains 45 references. (Author/RS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 361 656

Technical Report No. 584

PLANNING AND IMPLEMENTING COLLABORATIVE STRATEGY INSTRUCTION WITH DELAYED READERS IN GRADES 6-10

Valerie Anderson
The Ontario Institute for Studies in Education
and
University of Illinois at Urbana-Champaign

Marsha Roit
Open Court Publishing Company

September 1993

Center for the Study of Reading

TECHNICAL REPORTS

College of Education
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
174 Children's Research Center
51 Gerty Drive
Champaign, Illinois 61820

CS011391

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

F. Lehr

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CENTER FOR THE STUDY OF READING

Technical Report No. 584

PLANNING AND IMPLEMENTING COLLABORATIVE STRATEGY INSTRUCTION WITH DELAYED READERS IN GRADES 6-10

Valerie Anderson
The Ontario Institute for Studies in Education and
University of Illinois at Urbana-Champaign

Marsha Roit
Open Court Publishing Company

September 1993

College of Education
University of Illinois at Urbana-Champaign
174 Children's Research Center
51 Gerty Drive
Champaign, Illinois 61820

1992-93 Editorial Advisory Board

Diane Bottomley

Eurydice M. Bouchereau

Clark A. Chinn

Judith Davidson

Colleen P. Gilrane

Heriberto Godina

Richard Henne

Carole Janisch

Christopher Kolár

Brian A. Levine

Elizabeth MacDonell

Montserrat Mir

Punyashloke Mishra

Jane Montes

Billie Jo Rylance

Shobha Sinha

Melinda A. Wright

MANAGING EDITOR
Fran Lehr

MANUSCRIPT PRODUCTION ASSISTANT
Delores Plowman

Abstract

This report describes the evolution of an innovative research project in which inservice special education teachers engaged in collaborative strategy instruction with small groups of severely reading-delayed adolescents (ages 12-16). The project stressed working with teachers to resolve problems of application; this report emphasizes how teachers' contributions resulted in a unique approach to reading strategy instruction. The characteristics of the teacher education model are described and related to experimental findings from research carried out to test the effects of the model. Nine experimental and 7 control teachers and their students took part in the study. Experimental teachers received peer support from previously trained teachers and took part in self-evaluative workshops as they applied collaborative reading strategy instruction with their students. An analysis of videotaped pre- and posttest reading sessions showed significant gains in favor of experimental teachers on many dimensions related to fostering strategic reading, which were mirrored by related gains in students. A standardized comprehension test also favored experimental students. The report concludes with a discussion of some of the problems in achieving enduring effects with educational innovations and with suggestions for future research.

PLANNING AND IMPLEMENTING COLLABORATIVE STRATEGY INSTRUCTION WITH DELAYED READERS IN GRADES 6-10

For over a decade, reading strategy instruction has been well represented in the cognitive science literature (for reviews, see Pearson & Dole, 1987; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). Recently, conferences and journals for teachers and administrators, as well as some popular reading programs, have featured strategy instruction, and such instruction is becoming more widely attempted in schools. Naturally, questions have begun to arise about how strategy instruction can be carried out in schools across wide ranges of students over time. There is a pressing need for research that involves practicing teachers and their students. To be fully effective, the research must evolve in ways that recognize the adaptations of strategy instruction necessitated by classroom settings and integrate those adaptations with knowledge of how teachers and students understand strategic reading.

In this report, we describe the evolution of a research project that involves inservice teachers engaged in collaborative strategy instruction with multi-ethnic, inner-city, reading-delayed adolescents (ages 12-16). We define collaborative strategy instruction as teacher-student collaboration through discussion and evaluation of the strategies they generate for understanding prose. The instructional goal is to encourage active reading. In describing the development of the project, we emphasize the "meeting of minds" among researchers, teachers, and students that is necessary for instructional ideals to take shape under the less than ideal conditions that often exist in real classrooms.

Pressley et al. (1992) distinguish between traditional strategy instruction and strategy instruction involving student-teacher transactions that focus on text interpretations. The instruction described in this article, conducted with adolescents in grades 6-10 who were reading below grade 4 level, highlights group collaboration, opportunistic teaching, strategy combining, and reading as problem solving. In general, it is consistent with Pressley's description of transactional strategies teaching. In particular, however, the instruction focuses on adolescents' ability to access and self-evaluate their existing strategies for understanding informational texts. Although student-teacher transactions may concern alternative text interpretations, they most often concern the effectiveness of alternative strategies generated by students to determine text meaning. The use of students' strategies and the consideration of alternative strategies for solving reading problems under many different expository text conditions make this a unique approach to strategy instruction.

The Differences in Approaches to Reading Strategy Instruction

In terms of intentions, most reading strategy instructionalists are similar. Their emphatic goal is fostering mentally active reading and learning. Thus, strategy instruction stresses understanding the process of how one comprehends text. There is the belief that engagement in thoughtful reading will lead to comprehension, but that text recall alone is unlikely to produce an understanding of process or a deep understanding of text.

Despite a common goal, approaches to reading strategy instruction vary widely. The most obvious differences involve the strategies to be taught. There are more subtle distinctions, however, that may be crucial for choosing the most effective ways to teach poor readers. It is interesting to note that these differences caused confusion for the teachers in our project. The differences, elaborated below, concern the underlying purposes, implementation, and eventual utility of various approaches.

Is the Focus on Understanding or Remembering?

The purpose for teaching a strategy may be simply to understand text or it may be primarily to learn text content. This may not seem a fine distinction, but our experience with teachers suggests that they find it a difficult one. Some strategies, such as identifying a problem in understanding, using context to understand a difficult word, or rewording text to make meaning clear, are helpful in learning how to understand text. Other strategies, such as networking (organizing text content in a graphic form that illustrates informational relationships in a text), notetaking, and outlining, may aid understanding but are more often thought of as aids to remembering content. When the purpose of a strategy involves content acquisition, teachers often shift their emphasis from strategy use to the more common school task of content production. To many educators, learning informational text content is important. For poor readers, however, learning how to understand text may be paramount, and learning how to remember text may need to be a subsequent goal. Certainly, understanding a text does not guarantee that it will be remembered, but it is surely a prerequisite. Expectations of remembering content if understanding is fragile may result in poor readers becoming increasingly dependent on the teacher to help them produce content (Klein, 1989), perhaps at the expense of strategy use.

How Much Thinking Is Being Made Public?

Approaches differ as to how teachers and students are to reveal their thinking when employing strategies. Modelling as a way to teach strategies appears in most strategy research (e.g., Bereiter & Bird, 1985; Duffy et al., 1987; Palincsar & Brown, 1984). Some modelling, however, illustrates the outcome of a complex process--an outcome that, in turn, is an example of a strategy (e.g., a summary, a question). Modelling is often followed by "shaping," through questions or cues, to help the learner produce the strategy. Another kind of modelling, referred to as "thinking aloud," has an explanatory component that explicates the thinking that allows the modeler to produce the strategy. Duffy, Roehler, and Meloth (1984) and, more recently, Hermann (1988), and Rosenshine and Meister (1992) have made efforts to clarify this distinction, but which approach is most effective and under what conditions remains unclear. It seems likely, however, that poor readers need as much cognitive support as possible for generating strategies and that explicit thinking aloud could provide that support. We have found that some teachers have difficulty thinking aloud and tend to employ less complex modelling, thereby neglecting the thoughtful explanations that might simplify strategies.

Is the Focus on the Learning or on the Task?

Strategy instruction involves learning goals and overt procedures for achieving those goals. For example, the ability to summarize to check understanding is a learning goal, but carrying out a number of steps to produce a summary, gradually reducing the number of words in a text, or asking questions about a text are all tasks designed to achieve that learning goal. When strategies are taught, it is easy for students to get caught up in the task and lose sight of the intended learning. Although good strategy instruction requires students to tell what they are doing and why they are doing it, these verbalizations may not be based on an understanding of the connection between the task at hand and its less immediate learning goal. There is a critical difference between students' approaching learning as a task to finish versus approaching learning as a goal to achieve through problem solving. The need to focus on the latter is particularly important for poor readers, who have been characterized as passive (Torgeson, 1982), teacher dependent (Klein, 1989), and eager to get school assignments done without considering the learning involved (Anderson, 1984).

Some teachers also have difficulty distinguishing learning from task completion. Lortie (1975, p. 77) observed that teachers think of teaching as knowing the "tricks of the trade" rather than understanding the broader conceptions that underlie classroom practice. The result may be teaching methods that stress content production and testable outcomes rather than thinking about content and process.

Strategies taught through complex procedures are particularly subject to a task emphasis. In a meta-analysis of research on the self-questioning strategy, Rosenshine and Chapman (1991) found approaches at many levels of complexity. Hidi and Anderson (1986) found similar variations across summarization studies. For poor readers, however, the less complex the approach, the more likely they are to learn it and to focus on the learning rather than the task.

Are the Strategies Natural or Artificial?

Strategy approaches differ in the extent to which they resemble what a good reader might naturally do to understand text. Clearly, overly complex procedures are not usually natural, but even simpler approaches may not relate to natural reading. Resnick (1984) discusses giving oneself directions and strategies for self-questioning and self-management, suggesting that although these may not represent skilled performance, they may set important processes in motion. However, she calls for caution in distinguishing between reading competencies and the strategies that may help students acquire those competencies. It is possible that the supposed "helping strategies" actually complicate the process. For poor readers, the natural ability simply may not become manifest, or these students may not recognize the relationship between the artificial process and reading, thereby disallowing transfer. Thus, teaching more natural reading strategies may be more efficient and effective than teaching artificial ones. The question that has not been asked often enough about strategy instruction and that transactional strategy researchers are asking is simply, "Is this what a good reader really does?"

The differences we have described are subtle, complex, and important. They warrant better understanding if strategy instruction is to be effective in schools. Issues related to these differences arose throughout the development of collaborative strategy instruction, described below.

WORKING WITH TEACHERS TO DEVELOP AND IMPLEMENT STRATEGY INSTRUCTION

When we began to apply reading strategy instruction, we asked the participating board of education to determine where the instruction was most needed. The teachers most likely to volunteer were special education teachers, who particularly felt the need for new approaches to reading instruction for their students. The students volunteered by teachers were adolescents with profound reading problems that had not been ameliorated in spite of numerous efforts. Further, the teachers requested that we work with informational texts because they were especially difficult for these students.

Our instruction for students was influenced by research on thinking aloud procedures (Bereiter & Bird, 1985), strategy explanation (Duffy et al., 1987), student self-questioning (Wong, 1985), and expert reading strategies (Johnston & Afflerbach, 1985; Paris, Lipson, & Wixon, 1983). More directly, however, it grew out of an ongoing research program on text processing and intentional learning (Bereiter & Scardamalia, 1989) at the Ontario Institute for Studies in Education. Our initial efforts focused on implementing reciprocal teaching (Palincsar & Brown, 1984), enhanced by more explicit thinking aloud. This developed into a pilot project (Anderson & Burtis, 1989), which was refined with teachers to arrive at the project described here.

Teachers' Contributions to Instruction

During the development of our research, researchers provided information about findings from effective teaching and learning research, but teachers added equally strong advice about how to make that research viable in the classroom. As we collaborated, problems arose related to traditional strategy instruction. As they solved these problems, teachers shaped the instruction and made it more effective by bringing the following strengths to bear on the teacher/researcher collaboration.

A sense of the importance of students' immediate reading problems. The teachers, who were all experienced in working with reading-disabled students, wanted to use strategies to deal with their students' most obvious and immediate reading problems, such as lack of fluency, inability to decode and analyze words, difficulty processing long sentences, and inability to explain the meaning of what is read. Students, in contrast, were not convinced that their reading problems could be solved--a hopelessness compounded by inaccurate models of the reading process (Wittrock & Kelly, 1984). Poor readers often believe that any difficulty in reading reflects gross incompetence. Understandably, they are reluctant to bring their problem-solving abilities to bear on reading. To change these attitudes, a feature of our instruction became helping students to realize that recognizing and dealing with reading problems are characteristic of good rather than poor readers. Teachers not only informed students of this, but modelled having reading problems themselves and using strategies to solve them. Soon, students began to treat problems openly, as objects of inquiry to be discussed and resolved strategically and collaboratively by the group. In the following example, a teacher (T) promotes reading as a problem-solving process:

T: We've got some big words in here! Are big words going to be a problem?

S1: No

T: We've got to figure out some big words. We might have some difficulty. Do those scare you? Should we give up because there are big words in here? Gee, this is scary. Some of those words are longer than any I've ever seen.

S2: No

T: Have we had any practice dealing with that? What do we do when we come to big words?

S3: We sound them out or we find some little words inside the big words. Then we put them together.

T: So it's not hopeless, is it? When we come to big words, we don't say, "Ah, we're going to give up. Let's go home. Let's go to lunch." No, we say, "Let's try to work it out."

The next example shows a student initiating the discussion of a problem:

S1: I had trouble understanding this part. There were too many ideas.

T: You had trouble understanding. It's good that you told us that. Which particular bit did you have trouble with? Maybe we can help you.

S1: The end, the last sentence: "The East coast may be more dangerous than the West."

S2: I could read it back to him.

T: Good. How else could we help?

S3: You could try and give him a hint.

S4: Or, you could explain it in other words.

A natural cognitive empathy. A critical quality that teachers included in their instruction was something we call *cognitive empathy*. As students became open about problems, the teachers recognized signs from students that suggested that an awareness of problems and efforts to solve them were going on in students' minds. Students indicated this with remarks, but also by furrowed brows, pauses, puzzled looks, and even short in-takes of breath. Teachers were quick to pick up on these reactions--to catch the moment when thinking occurred--and to encourage students to make thoughts public by asking them questions like, "What's on your mind? You seem to be thinking about something--what are you trying to figure out? How are you going about it? How can we help?" The following shows a teacher employing cognitive empathy.

T: I see a confused look here. Which part is confusing you?

S1: The part that says, "human again."

T: I guess it isn't really "again." Does anyone have a strategy to figure that one out? You usually have very good ones.

S2: "Agging"

T: Do you know what "agging" means?

S2: To bother?

T: I think that if I relate this word to the title, "Growing Old," that would help me to get an idea.

S1: "Aging."

T: Aging. What helped you get that?

S1: After you said growing old, I looked at the title and I just remembered that someone growing old is aging.

Students soon extended cognitive empathy to each other and the talking about strategies began in earnest:

S1: (After a student breathlessly completed the reading of a paragraph) No offence or anything, but the way you read that sounded like one big, long sentence. Try to pause when you see a period.

S2: Ok, thanks.

A respect for students' existing strategic knowledge. The teachers had confidence in their students' existing strategic abilities based on their knowledge of how these adolescents attempted to solve real-life problems. This point of view resulted in a radical shift in our approach to strategy instruction. Approaches to strategy instruction have not been designed in ways that allow teachers to capitalize on adolescents' existing strategic competencies. Strategy instruction typically involves the passing on to students of one or more prescribed, experimenter-determined strategies, with little regard for whether learners have existing strategic knowledge. Adolescents, especially, cannot be viewed as strategic tabula rasa, although they clearly have difficulty applying their strategic abilities to reading. They have tried and failed to learn to read for a long time. Most of them have learned something about how to read, but they have lost confidence in their efforts to try to read. Our teachers were eager to restore that

confidence and to let students know that their ideas and efforts were worthwhile. Although the teachers and students were receptive to strategies based on research, such as summarizing, question asking, imaging, and using context, the teachers made efforts to draw out existing strategies and to help students judge the efficacy of their strategies in the light of the problems and texts at hand.

In observing the over 80 students involved in this research, as well as students in our previous and ongoing research, we have noted 10 strategies from their everyday experience that can be applied to text: recognizing a problem, making things real, knowing what matters, making sense, agreeing/disagreeing, having reasons, getting ready for what comes next, getting back on track, explaining, and wrapping up experiences. The expressions used here are those that the teenagers themselves used to describe their thinking. Some of their terms, however, can be related to ones that educators call reading strategies, such as understanding importance, predicting, summarizing, and self-monitoring. The teachers encouraged students who were accessing strategies to explain them in their own words, helped students to realign their strategies so that they could be applied to text, and informed students of the more formal reading terminology. It was important, however, for students first to understand their own processes in their own terms.

There is a distinct difference between students' performance when they are following their teacher's models and when they are calling up strategies of their own. When students are replicating strategies, they use their teacher's words. When students call up their own strategies, they use their own words and show more intense signs of thoughtful effort. To make this difference clearer, a definition of strategies congruent with instruction seems in order. In the literature, there have been numerous attempts to define strategies (e.g., Harris & Pressley, 1991; Smith, 1988). Our own definition does not differ substantially from others' but stresses the role of existing mental competencies in the formation of strategies. We define a strategy as a thoughtful and effortful mental act designed to maintain existing mental competencies when those competencies are taxed. Learning to read taxes existing competencies in endless ways. Poor readers have often maintained basic as well as more complex comprehension problems in reading and must contend with both. Even after one knows how to read, however, every new text presents a new set of conditions that require more or less strategic effort. As automatic competencies fail, alternative ones must be accessed and considered. For poor readers, unusual effort is required, with even greater need for consideration of alternative competencies as problems arise.

The teachers we worked with encouraged group members to reveal their strategies to each other so that alternatives could be considered. The following example shows a teacher helping students access strategies but, more importantly, it shows students bringing a variety of strategies forth.

T: What are some of the strategies you can use to find out words that are a problem for you?

S1: Read through to the end of the sentence.

T: All right. Read to the end of the sentence. What's another strategy?

S2: Break it up into little words.

T: Good. Anything else?

S3: Sound it out.

T: Ok. Sound it out. Any other strategies you could use?

S4: Use another word.

T: All right. You could substitute another word. Often people do that. When I'm reading along, if there's a word I might not know and I know from the idea of the sentence what word would make sense there, I can substitute. Like, if you didn't know how to read the word "house", yet you knew the word "home" obviously fit in there, you could put in "home" instead of "house."

Duffy (1992) called for approaches to strategy instruction that create strategy generators rather than strategy replicators. Strategy generation is one of the most important features of our instruction. Although teachers and students returned to particularly potent strategies (e.g., looking back and using context) again and again in the reading sessions, new strategies and combinations of strategies arose continuously.

An ability to model thoughtful reading. The teachers often modelled how they solved their own reading problems by explaining things that they, as good readers, would naturally do to understand text. On one occasion, for example, students could not read the word "colonists" in the title of a text. The teacher asked them if they thought it was important. They thought so because it was in the title. The teacher agreed, then pointed out that she often quickly skimmed through a bit of a text to see how many times the word appeared. If it appeared a lot, it was important. The students carried out the teacher's strategy immediately and found that the word appeared eight times in the first three paragraphs. Needless to say, they were impressed with the importance of the word and with the strategy.

The teachers also used their abilities as good readers to combine strategies. For example, when a student had difficulty reading a word, the teacher modelled using context in combination with rereading the sentence to make sure it made sense. Teachers often provided students with easier alternatives for generating strategies as well. For example, if a student could not summarize a passage to check understanding, the teacher suggested skimming back over the text to get the gist.

The teachers engaged in reading sessions that resembled natural conversations about text rather than teacher-determined lessons. This was often accomplished by reducing teacher-given, content-based questions. Instead, teachers asked and encouraged students to ask the kinds of questions that people might actually ask each other about text. They are content-free questions that can be asked of many texts and are more transferable than content questions that usually relate to only the text at hand. Research by King (1990) supports these types of questions as a way to enhance comprehension. The following are examples of such questions, divided into categories that indicate the kind of information they generate:

For accessing text content:

What is this about?
What are the most important ideas?
What is most interesting?
What did you find out that you didn't know before?
What surprised you?

For accessing world knowledge:

What do you already know about this?
What would you like to find out about this?
What does this remind you of?

For accessing strategic knowledge:

What problem are you trying to solve?
How are you trying to solve the problem?
How did your try work out?
What else might solve the problem?
What do you think and why do you think so?

For accessing knowledge about reading in general:

What did you learn about reading?
How can you use what you learned to read other things?
How did this help your reading?

Influence of the Instructional Environment

The teachers' instructional contributions were enhanced by other characteristics of the instructional environment. Teachers made decisions regarding these features on the basis of what they felt would be most workable in their classrooms.

Use of informational text. The teachers asked the researchers to provide informational texts but expressed concern that student self-selected texts might be more motivating. To solve this problem, teachers were given 135 informational texts from a variety of content areas--a mini-library of texts from which students could choose what they wanted to read. All texts were taken from real text sources, such as *Cricket* magazines. Although the texts dealt with topics that were interesting and familiar to adolescents, they also provided new information. Criteria for selecting texts were developed in part from research findings on students' interests (e.g., Hidi & Baird, 1988) and have been elaborated more fully elsewhere (Anderson & Roit, 1990). The teachers were excited about the texts because they provided interest and variety and represented a better selection of informational texts than the texts currently available to them. In addition, texts were somewhat challenging, so problems arose naturally for discussion during reading.

Small-group reading sessions. Instruction occurred in small-group reading sessions. This was natural for the teachers because their classes typically consisted of small groups of students (2 to 10). Small groups made a conversational approach to understanding text easier to carry out. The teachers were used to being members of these groups and showed a less-than-usual tendency to dominate learning.

Small groups also made collaboration among students and teacher easier. Research on the positive effects of collaboration has become commonplace (e.g., Slavin, 1983), but Salomon and Globerson (1989) have identified problems that can arise in collaborative situations, largely related to group members' understandings of a task and feelings about their roles within the group. In our instruction, such problems were less likely to arise. The learning goal--becoming a more active reader in order to understand text better--was clear and consistent. The groups were made up of delayed readers with a variety of reading problems and strengths. There was a focus on revealing and treating problems as objects of inquiry to be discussed and resolved by the group. Such a focus changed a negative view toward reading problems to a positive one and eliminated problems related to high or low group status and lack of involvement.

Because instruction involved dealing with reading problems openly, the teachers preferred oral to silent reading. Although preferences for oral or silent reading have wavered over the years, results on which is most effective have been mixed. Wilkinson, Wardrop, and Anderson (1988) reanalyzed some of the research on oral reading and found that, for beginning readers, problem readers, and readers engaged

in reading difficult material, oral reading appeared to increase reading comprehension. In our research, we used oral reading as a medium because it made reading performance easier to analyze and made problems and subsequent strategic solutions more obvious to the group. Moreover, oral reading allowed the group to handle problems when good readers handle them--as they occur during reading. Further, reading aloud naturally enhanced teachers' and students' ability to employ cognitive empathy because the required signals were more text-relevant and overt.

In sum, this instruction was primarily guided and molded by teachers and students. The teachers' strengths, described previously, show the ways in which teachers, students, and we researchers jointly developed a distinctive approach to strategy instruction.

A Description of a Reading Session

Teaching sessions varied, but because the teachers learned so much from each other, similarities emerged. The sessions began to take on a framework within which teachers and students could opportunistically learn about solving reading problems and learning to read. A typical session might include the following:

- After selecting a text, students discuss what they already know about its topic.
- Students skim to get an idea of what the text might be about and to look for potential problems.
- Students decide to discuss some difficult aspects of the text and save other aspects for discussion during reading.
- Students discuss what they might want to find out from reading the text.
- Students volunteer to read parts of the text, with ongoing problem detection and strategy generation throughout. Breaks in reading that might interrupt comprehension are recovered by periodic wrapping up to ensure coherence and understanding.
- After reading, students return to the ideas they expressed before reading regarding what they thought the text was about and what they wanted to find out. These ideas are discussed in the light of what students discovered during reading.
- Students discuss new learning based on text content.
- Students discuss the problems they had and the strategies they tried. The focus is on what worked, what did not, and why. Further, students discuss what they learned about reading during the session that would help them to read other texts.

This framework did not limit teachers. In fact, it allowed them to focus most on the opportunistic aspects of teaching. As one teacher remarked, "I don't find this kind of teaching difficult. It requires little preparation. All I have to do is sit down with the kids and a text and act like a real reader."

Again, our experience with these teachers was a fully collaborative one. Although they accepted and employed ideas from research, they were opportunistic, spontaneous, and flexible in their approach to

strategic teaching. In many ways, the teachers created their own development. Thus, teachers' contributions had a substantial effect on the teacher development model and research described next.

THE TEACHER DEVELOPMENT MODEL

Research was carried out to test a teacher education model that grew out of our ongoing work with teachers (for a full report of the quantitative and qualitative analyses involved in this research, see Anderson, 1992). The study tested the effects of instruction for both teachers and students. The research involved explicit instruction for a group of experimental teachers and their students which was compared with the more conventional instructional approach that the control teachers would normally carry out with their students. Participants in the study were 9 experimental teachers, 7 control teachers, and 7 previously trained peer support teachers who provided experimental teachers with additional help on request. In addition, the delayed readers in the experimental and control teachers' regular pull-out programs, for a total of 84 students, were involved in the study. Students were in grades 6 through 10, with an equal distribution of grade levels across experimental and control groups. During the course of the study, experimental teachers engaged in 3 teacher-development sessions of 3 hours each. The sessions were conducted once a month while the teachers were working with their students to apply the method. Both experimental and control teachers taught reading comprehension to small groups of students twice a week for a period of 3 months (approximately 24 sessions of 40 minutes each) using the same set of expository texts described earlier, but only experimental teachers took part in the teacher-development sessions and received peer support.

Data were collected on experimental (9) and control (7) teachers and their students. Pretest data consisted of baseline information on how experimental and control teachers and their student groups ordinarily performed in reading sessions. To obtain this data, before the training of the experimental teachers began, each experimental and control teacher was videotaped for approximately 30 minutes while teaching reading to their students. After the three-month intervention, posttest videotapings of the experimental and control teachers were identical to pretest tapings, except that each teacher used a text different from the one used at pretest. Thus, the main data for analysis in this research were composed of the pre- and posttest videotapings of experimental and control teachers engaged in small group reading sessions with their students. A pre- and posttest standardized reading achievement test (Stanford Diagnostic Reading) was also given to all students.

A rating scale was developed for rating transcriptions of the pre- and posttest videotapes. Both teachers and groups of students were rated on a variety of dimensions related to strategic reading (described below). Two trained independent raters performed blind ratings on the transcriptions. Interrater reliability was examined by means of Pearson correlations and showed that raters were highly reliable across dimensions. The change score (posttest score minus pretest score) for each dimension was examined by a *t*-test to assess the significance of changes.

The teacher development model, as expressed in the sessions held with the experimental teachers, has a number of distinctive features. A main purpose of the sessions was to make strategy instruction workable in the classroom for adolescents trying to understand informational texts. The tenor of the workshops was problem solving and self-evaluation, which mirrored the instruction for students. Next, we describe the special features of the model. Results of the research are briefly summarized throughout the description as they apply to those features.

Teachers as Developers of Research

Teachers were given plans for teacher development, instructional implementation, data collection, and analyses. To encourage teacher/researcher collaboration, the procedures were discussed at each training

session, with problems aired and resolved by the group. Every effort was made to include teachers as active contributors to the development of the research.

Peer Support

The advantages of peer coaching have been well documented (e.g., Neubert & Bratton, 1987). To enhance teacher development, teachers involved in a pilot project provided support for colleagues who were new to the approach. Support teachers attended workshops and were available to experimental teachers as needed. The participating school board also included the project as part of its larger peer support effort.

Problem-Solving Discussions

Much of each workshop was devoted to discussing instructional problems and proposing solutions. The collaborative problem solving that characterized both teacher and student instruction was reflected in the results of the research. Experimental teachers and their students showed statistically reliable gains over controls in the amount of collaboration and problem solving that they engaged in during reading sessions ($p = < .01$).

Principles and Techniques for Fostering Active Reading

Teachers were given a set of general principles for fostering active reading that were developed with teachers during the pilot study. The principles were not intended to impose a conceptual framework on teachers but rather to provide them with heuristics to guide their teaching and to allow them to generate new teaching techniques within, across, and beyond the reading sessions so that strategy use might be fostered throughout the day. The principles are as follows:

- Difficulties in reading should be treated openly, as objects of inquiry, among members of the group.
- Throughout instruction, stress aspects and strategies of learning how to read (learning goals) rather than simply understanding the content of a particular text (task goals).
- Acquiring reading know-how should be a collaborative enterprise between students and teacher, with the collaborators sharing their discoveries, insights, problems, and strategies, and working together to attain reading/learning goals.
- Emphasis should be placed on new learning rather than on what the students already know.
- Emphasis should be placed on keeping the students informed of purposes, problems, and progress.
- Emphasis should be placed on process rather than product, on learning how to do something rather than on simply getting answers right.
- Instruction should try to maximize the students' ability to carry out all parts of the reading process *independently*. The reading that students should be competent in handling includes the mental activities that precede and follow as well as all the thinking and questioning that go on during active reading.

Teachers also were given examples of teaching techniques that supported each principle. These included advice on how to help students begin to discuss reading problems; how to stimulate thinking before, during, and after reading; how to improve questioning; and how to convey and access strategies. Special attention was given to thinking aloud and to turning over to students responsibility for learning, because these were particularly new ideas to teachers.

The principles and techniques were effective. Experimental teachers gained over controls on each of the following dimensions: keeping students informed, focusing on text and reading, setting goals before reading, problem solving during reading, summarizing to check comprehension, reflecting on goals after reading, and discussing new learning from text ($p = < .003$, or less).

Teaching Shifts, Videotapes, and Self-evaluation

Anderson and Burtis (1989) observed that teachers had some difficulty recognizing how fostering active reading differed from the way they usually taught. To help teachers make these distinctions, 20 teacher "shifts" and 12 student "shifts" were developed. The teacher shifts are changes in teaching that need to be made to encourage active reading. The student shifts mirror the teacher shifts and provide teachers with a way of observing changes in their students to judge the effectiveness of their teaching. Tables 1 and 2 provide abridged teacher and student shifts. On the left side, the tables list the ways teachers and students typically act in remedial reading sessions. On the right is a contrasting list of behaviors that promote active reading. Both typical and exemplary behaviors were drawn from previous research on teachers working with remedial reading groups (Anderson & Burtis, 1989).

[Insert Tables 1 and 2 about here.]

Shifts were used during the workshops for self-evaluation. Each teacher was videotaped teaching students three times during the study--at pretest, mid-study, and posttest. During each workshop, teachers were shown positive instances of their own teaching that they evaluated in the light of the shifts. As some shifts were accomplished, new ones were emphasized, so that support was tailored to the teachers' immediate needs. The teachers selected those shifts that they felt most needed advancement, thus giving them considerable choice within the limits of the shifts. The main advantage of the shifts is that they give teachers a clear picture of the difference between how they usually teach reading and how they might alter their teaching. It should be pointed out, however, that teachers were never given the impression that their previous teaching had been poor, but rather that recent research had provided some suggestions for improving the teaching of delayed readers.

A purpose of this research was to investigate direct connections between teacher change and student reading performance. Although such connections have been investigated with more conventional teaching (Nuthall & Alton-Lee, 1991), less is known about them with regard to strategy use. We predicted that, as teachers increasingly fostered active reading, student reading performance would improve, and it did.

Specifically, teachers were rated on seven of the shift dimensions: treating reading problems openly, focusing on how to solve problems, providing models of thinking, teaching question asking, asking thought-provoking questions, allowing student control, and focusing on group collaboration. Experimental teachers gained over controls on all dimensions. Experimental students were rated on seven related dimensions that were viewed as indicators that students were becoming more active readers and exhibiting a better understanding of informational texts. Students also gained over controls on all of the shift dimensions. As predicted, the teacher shift gains resulted in concomitant student gains. In sum, results for both experimental teachers and students were highly significant on all dimensions ($p = < .01$). Control teachers showed no change, and neither did their students. In

addition, on the standardized subtest of reading comprehension, 50% of the control students gained, but 80% of the experimental students gained.

RESEARCH TOPICS

Although the project has shown exceptional results, there is still much to do. The students learned some things about reading informational texts, but they have a long way to go, particularly with regard to understanding differences among content domains and study strategies. Further, we know little about the transfer effects of the project, although we are currently investigating this. At this point, there is also no assurance that what the teachers learned will endure or advance. A longer study is needed so that teachers and students can receive further instruction and be followed up over time. Other problems need to be addressed. Following are four that seem crucial.

Broadening Participation

Cognitive innovations seem to depend on the originator being involved in the implementation. Innovations that work on a small scale often fail when disseminated more widely, as communication lines lengthen and teachers are brought in who do not share the "pioneers'" enthusiasm. Will it be possible to broaden the program gradually and still maintain program integrity by increasingly turning over responsibility for inservice sessions and school consultations to teachers as they gain competence in strategy instruction?

Depth of Teachers' Understanding

Teachers must fully understand an intervention if they are to implement it successfully (e.g., Knapp & Peterson, 1991). Teachers who think of an approach in superficial, procedural terms quickly abandon it, even when they are initially enthusiastic. The strategy instruction described here runs counter to the notion of "tricks of the trade," or activities, that can be carried away from workshops and applied in a piecemeal fashion. It is a learning-based rather than an activity-based way of teaching and, thus, teachers must understand it at a deeper level. This may take more time and effort than a short-term approach permits, but it also may be necessary to intensify the focus on the philosophy and goals of strategy instruction during teacher development. Further, the growth of teachers' understanding over time needs to be studied, using periodic interviews, questionnaires, and videotapings.

Teachers' Internalization of Strategies

The use of strategies must eventually be internalized and assimilated into normal behavior in a natural and flexible way. Interviews with teachers in our project reveal that only those who have implemented the instruction for 2 years use it flexibly and opportunistically across the school day. At this point, few models exist of strategy instruction conducted by experienced strategy teachers who have internalized important aspects of the approach. We are attempting to collect such models (Roit, 1991) and further examples have been described by Pressley et al. (1992). The study of these teachers could help to determine what is actually internalized and how that guides teaching. In addition, examples of their teaching might be found that could help clarify the method for new strategy teachers and aid internalization.

Ownership

The widespread recognition that teachers must feel a sense of "owning" an innovation has led some researchers to believe that successful innovations can only grow out of teachers' own practice and that the only productive research involves teachers reflecting on that practice. But ownership can also work to the detriment of an innovation. For example, Stephens (1982) conducted a cognitive mathematics

program that he felt failed because it was assimilated into an existing network of beliefs, purposes, and practices. Teacher educators often make goals less than clear in an effort to allow teachers to specify changes that are in accordance with their well-rehearsed and entrenched traditional practices. This results in little success (Goodlad, Klein, & Associates, 1970; Saronson, 1982) and in what Fullan (1991, p. 35) calls a "false clarity." There are large differences between traditional and cognitive instruction (Dole, Duffy, Roehler, & Pearson, 1991)--so large that efforts that force teachers to try independently to integrate the latter into the former may be doomed to failure, with more traditional practices becoming the teachers' default option.

The view that teachers can only have ownership of ideas from their existing practice severely restricts the possibilities for new scientific knowledge to affect teaching. The project we have described grew out of "shared competencies" between researchers and teachers. The teachers changed their ideas about instruction on the basis of our ideas, and our sense of strategy instruction changed on the basis of the teachers' views. More study is needed to find ways in which researchers and teachers can integrate their knowledge. Not only will this help teachers to achieve a legitimate sense of ownership of knowledge from cognitive research, but it is essential if that research is to move successfully into practice.

CONCLUSION

The results of this project show the advantages of collaborative, small group strategy instruction for both teachers and adolescent delayed readers. The teacher development model was designed to be sensitive to teachers' views, involvement, personal choices, and general comfort, but it also provided teachers with strong and ongoing guidance and support from researchers and peers. Because the teachers played such a large part in the development of the project, they remained active, interested, and involved throughout.

The strong student shift gains indicate that students learned much from their teachers. The students' increased willingness to try to solve reading problems in order to learn *how* to understand text demonstrates that this instruction can alleviate some of the passivity and resistance often found in adolescent poor readers. We believe that the students' problem-solving efforts were particularly meaningful and successful because they were often generated by the students themselves.

The project has attempted to advance reading strategy instruction by altering it in ways that maintain its essential goals while merging them with the more applied goals of a special group of teachers and students.

References

Anderson, L. (1984). The environment of instruction: The functions of seatwork in a commercially developed curriculum. In G.G. Duffy, L.R. Roehler, & J. Mason (Eds.), *Comprehension instruction: Perspectives and suggestions* (pp. 93-103). New York: Longman.

Anderson, V. (1992). A teacher development project in transactional strategy instruction for teachers of severely reading-disabled adolescents. *Teaching and Teacher Education, 8*, 391-403.

Anderson, V., & Burtis, P. J. (1989, April). *Fostering intentional learning in read-aloud sessions with learning disabled adolescents*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Anderson, V., & Roit, M. L. (1990, December). *Developing independent active reading behaviors with reading disabled adolescent learners*. Paper presented at the annual meeting of the National Reading Conference, Miami, FL.

Bereiter, C. & Bird, M. (1985). Use of thinking aloud in identification and teaching of reading comprehension strategies. *Cognition and Instruction, 2*, 131-156.

Bereiter, C., & Scardamalia, M. (1989). Intentional learning as a goal of instruction. In L.B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 361-392). Hillsdale, NJ: Erlbaum.

Dole, J.A., Duffy, G. G., Roehler, L. R., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research, 61*, 239-264.

Duffy, G. G. (1992, April). *Learning from the study of practice: Where we must go with strategy instruction*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Duffy, G. G., Roehler, L. R., & Meloth, M. S. (1984). The effects and some distinguishing characteristics of explicit teacher explanation during reading instruction. In J. Niles & L. Harris (Eds.), *Changing perspectives on research in reading/language: Processing and instruction. Thirty-third yearbook of the National Reading Conference* (pp. 223-229). Rochester, NY: National Reading Conference.

Duffy, G. G., Roehler, L. R., Silvan, E., Rackliffe, G., Book, C., Meloth, M. S., Vavrus, I., Wesselman, G., Putnam, J., & Bassiri, D. (1987). The effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly, 22*, 347-367.

Fullan, M. G. (1991). *The new meaning of educational change* (2nd ed.). New York: Teachers College Press.

Goodlad, J. I., Klein, M., & Associates. (1970). *Behind the classroom door*. Worthington, OH: Charles A. Jones.

Harris, K. R., & Pressley, M. (1991). The nature of cognitive strategy instruction: Interactive strategy construction. *Exceptional Children, 57*, 392-404.

Hermann, B. A. (1988). Two approaches for helping poor readers become more strategic. *Reading Teacher, 42*, 24-28.

Hidi, S., & Anderson, V. (1986). Producing written summaries: Task demands, cognitive operations, and implications for instruction. *Review of Educational Research, 86,* 473-493.

Hidi, S., & Baird, W. (1988). Strategies for increasing text-based interest and students' recall of expository texts. *Reading Research Quarterly, 23,* 465-483.

Johnston, P., & Afflerbach, P. (1985). The process of constructing main ideas from text. *Cognition and Instruction, 2,* 207-232.

King, A. (1990). Peer interaction and learning in the classroom through reciprocal questioning. *American Educational Research Journal, 27,* 664-687.

Klein, L.S. (1989). *Instructional interactions that encourage learning disabled students' dependency on teachers*. Unpublished master's thesis, University of Toronto.

Knapp, N. F., & Peterson, P. L. (1991). *What does CGI mean to you? Teachers ideas of a research based intervention four years later* (Elementary Subjects Center Series No. 48). East Lansing: Michigan State University, Institute for Research on Teaching.

Lortie, D. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.

Neubert, G.A., & Bratton, E.C. (1987). Team coaching: Staff development side by side. *Educational Leadership, 44,* 29-33.

Nuthall, G. A., & Alton-Lee, A. (1991, April). *Making the connection between teaching and learning.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Palincsar, A. M., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 1,* 117-175.

Paris, S. G., Lipson, M. Y., & Wixson, K. K. (1983). Becoming a strategic reader. *Contemporary Educational Psychology, 8,* 293-316.

Pearson, P. D., & Dole, J. A. (1987). Explicit comprehension instruction: A review of the research and a new conceptualization of instruction. *Elementary School Journal, 88,* 153-167.

Pressley, M., El-Dinary, P.B., Gaskins, I., Schuder, T., Bergman, J., Almasi, J., & Brown, R. (1992). Beyond direct explanation: Transactional instruction of reading comprehension strategies. *Elementary School Journal, 92,* 513-556.

Pressley, M., Johnson, C. J., Symons, S., McGoldrick, J. A., & Kurita, J. (1989). Strategies that improve memory and comprehension of what is read. *Elementary School Journal, 90,* 3-32.

Resnick, L. B. (1984). Comprehension and learning: Implications for a cognitive theory of instruction. In H. Mandl, N. L. Stein, & T. Trabasso (Eds.), *Learning and comprehension of text* (pp. 431-443). Hillsdale, NJ: Erlbaum.

Roit, M.L. (1991, December). *Teachers using transactional strategy instruction: Three case studies.* Paper presented at the annual meeting of the National Reading Conference, Palm Springs, CA.

Rosenshine, B., & Chapman, S. (1991, April). *Scaffolding in successful intervention studies in question generating*. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Rosenshine, B., & Meister, C. (1992). The use of scaffolds for teaching higher-level cognitive strategies. *Educational Leadership, 49,* 26-33.

Salomon, G., & Globerson, T. (1989). When teams do not function the way they ought to. *International Journal of Educational Research, 13,* 89-98.

Saronson, S. (1982). *The culture of the school and the problem of change* (rev. ed.). Boston: Allyn & Bacon.

Slavin, R. (1983). *Cooperative learning*. New York: Longman.

Smith, C.B. (1988). Strategic thinking in reading. *Reading Psychology, 9,* 267-274.

Stephens, W. M. (1982). *Mathematical knowledge and school work: A case study of the teaching of developing mathematical processes*. Unpublished doctoral dissertation, University of Wisconsin, Madison.

Torgeson, J. K. (1982). The learning disabled child as an inactive learner: Educational implications. *Exceptional Children Quarterly, 1,* 45-52.

Wilkinson, I., Wardrop, J. L., & Anderson, R. C. (1988). Silent reading reconsidered: Reinterpreting reading instruction and its effects. *American Educational Research Journal, 25,* 127-144.

Wittrock, M. C., & Kelly, R. (1984). *Teaching reading comprehension to adults in basic skills courses* (Final Report, Project No. MDA 903-82-C-0169). Los Angeles: University of California, Graduate School of Education.

Wong, B. Y. L. (1985). Self-questioning instruction research: A review. *Review of Educational Research, 55,* 227-268.

Author Note

The research reported here was funded by a transfer grant to the Ontario Institute for Studies in Education from the Ontario Ministry of Education. We wish to thank Carl Bereiter, Jud Burtis, Suzanne Hidi, Michael Pressley, and Barak Rosenshine for their ongoing advice and support for this work. And, of course, particular thanks go to the administrators, consultants, and teachers from the North York Board of Education, North York, Ontario, who participated in the research and became our most valued colleagues.

A version of this report is scheduled to appear in *Elementary School Journal*.

Table 1

Teacher Shifts Toward Fostering Active Reading Strategies and Intentional Learning

From	To
1. Focuses on smooth and errorless reading.	1. Welcomes reading problems as objects of inquiry.
2. Focuses on and provides "right" answers.	2. Focuses on *how to* solve problems.
3. Asks content-based questions that apply only to the present text.	3. Stresses asking content-free questions that apply to many texts.
4. Focuses on students' interests, assuming that learning takes place.	4. Focuses on what students are learning, keeping interests in mind.
5. Focuses on what students know.	5. Focuses on new learning.
6. Teaches a strategy in the same way even after it is mastered.	6. Introduces increasingly complex strategy use.
7. Models answers.	7. Models and encourages students to model thinking.
8. Maintains control of what is to be learned.	8. Lets students take control of what is to be learned.
9. Does most of the hard thinking.	9. Teaches students to do the hard thinking.
10. Emphasizes getting reading finished.	10. Emphasizes learning from and about reading.
11. Does not inform students of purposes.	11. Tells students what they will be learning and why it is worth learning.
12. Focuses on content recall.	12. Focuses on understanding.
13. Avoids teaching during actual reading.	13. Teaches during reading to ensure understanding.
14. Begins session by asking questions or telling about the text.	14. Begins session by having students skim to form their own impressions and goals.

Table 1 (Continued)

From	To
15. Begins session with motivators; ends with questions.	15. Begins session with goal setting/ predictions; ends by returning to them.
16. Decides which words and ideas in a text will be difficult.	16. Teaches students to determine difficult words and ideas.
17. Focuses on individual performance and success.	17. Focuses on group collaboration.
18. Teaches the same approach to all texts.	18. Fits strategies to appropriate texts.
19. Encourages homogeneity so that everyone will show the same accomplishments.	19. Encourages different competencies so that students can share ideas.
20. Presents only very easy material.	20. Presents somewhat challenging material.

Table 2

Student Shifts Toward Active Reading and Intentional Learning

From	To
1. Participates in reading only when interested.	1. Participates in reading to learn new ideas.
2. Avoids reading difficult or unfamiliar text.	2. Tries to read difficult or unfamiliar text.
3. Focuses on his/her own participation.	3. Focuses on collaborating with the group.
4. Avoids or ignores reading problems.	4. Reveals and investigates reading problems.
5. Directs effort to giving right answers.	5. Directs effort to how to solve problems.
6. Depends on the teacher to determine learning.	6. Attempts to take on the teacher role.
7. Answers questions.	7. Asks questions.
8. Reads without reaction.	8. Reacts to text.
9. Follows the teacher's lead.	9. Provides models for others.
10. Gives the briefest possible responses.	10. Gives elaborated responses.
11. Focuses on getting reading finished.	11. Focuses on learning from reading.
12. Avoids thinking.	12. Seeks challenges in thinking.